

# Comparisons of Job Characteristics

Focus Occupation: **Materials Engineers (17-2131)**

Associated Occupation: **Materials Scientists (19-2032)**

[Compare Knowledge](#)

[Compare Skills](#)

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[Compare Detailed Work Activities](#)

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<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

## Knowledge

Similarity of Focus Occupation to Associated Occupation: 88

Focus Occupation: Materials Engineers (17-2131)

Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation
Chemistry	4.8	23.3	15.3	<< Extensive education and/or training may be required
Engineering and Technology	5.7	16.2	18.9	> Current knowledge level is likely sufficient
Mathematics	9.2	15.5	11.8	<< Extensive education and/or training may be required
Administration and Management	8.4	13.3	7.4	<< Extensive education and/or training may be required
Production and Processing	6.0	11.8	8.1	<< Extensive education and/or training may be required
Physics	4.3	9.6	10.6	> Current knowledge level is likely sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

## Skills

Similarity of Focus Occupation to Associated Occupation: 95

Focus Occupation: Materials Engineers (17-2131)

Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation
Science	4.5	16.8	13.0	<< Extensive development of skills in this area may be required
Reading Comprehension	10.7	14.6	13.6	0 Current skill level may be sufficient
Critical Thinking	10.8	13.8	13.5	0 Current skill level may be sufficient
Complex Problem Solving	9.1	12.0	12.0	0 Current skill level may be sufficient
Operations Analysis	5.0	11.7	11.7	0 Current skill level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

Abilities		Similarity of Focus Occupation to Associated Occupation: 99			
Focus Occupation: Materials Engineers (17-2131) Associated Occupation: Materials Scientists (19-2032)					
Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Oral Expression	12.4	15.4	15.3	0	Current ability level may be sufficient
Oral Comprehension	12.5	15.3	14.1	0	Current ability level may be sufficient
Written Comprehension	11.0	14.2	14.2	0	Current ability level may be sufficient
Inductive Reasoning	10.2	14.1	13.9	0	Current ability level may be sufficient
Deductive Reasoning	10.6	13.8	14.2	0	Current ability level may be sufficient
Problem Sensitivity	11.1	13.5	14.7	0	Current ability level may be sufficient
Written Expression	9.8	13.4	13.8	0	Current ability level may be sufficient
Originality	7.6	12.4	10.6	<	Some improvement in abilities may be required
Category Flexibility	9.0	11.9	11.5	0	Current ability level may be sufficient
Flexibility of Closure	7.8	10.6	8.8	<	Some improvement in abilities may be required
Mathematical Reasoning	6.3	10.3	10.2	0	Current ability level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common		Similarity of Focus Occupation to Associated Occupation: 93
Focus Occupation: Materials Engineers (17-2131) Associated Occupation: Materials Scientists (19-2032)		
Work Activities	Exclusivity of Activity	
Advise clients or customers	19	
Analyze scientific research data or investigative findings	27	
Collect scientific or technical data	30	
Communicate technical information	4	
Conduct laboratory research or experiments	57	
Conduct standardized qualitative laboratory analyses	62	
Conduct standardized quantitative laboratory analyses	62	
Confer with engineering, technical or manufacturing personnel	25	
Confer with research personnel	50	
Confer with scientists	54	
Develop or maintain databases	30	
Develop plans for programs or projects	31	

Develop policies, procedures, methods, or standards	21
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Perform statistical analysis in physical science or geological research	71
Prepare reports	8
Prepare technical reports or related documentation	22
Recognize characteristics of metals	62
Resolve engineering or science problems	46
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use hazardous materials information	35
Use knowledge of investigation techniques	16
Use knowledge of materials testing procedures	70
Use library or online Internet research techniques	21
Use mathematical or statistical methods to identify or analyze problems	30
Use metal processing methodology	99
Use physical science research techniques	68
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17
Write business project or bid proposals	48

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.

## Tools and Technologies that Both Occupations Have in Common

Similarity of Focus  
Occupation to Associated  
Occupation: 88

**Focus Occupation: Materials Engineers (17-2131)**  
**Associated Occupation: Materials Scientists (19-2032)**

Tools and Technologies	Exclusivity
Cement and ceramics and glass industry machinery and equipment and supplies	40
Chemical evaluation instruments and supplies	10
Computers	1
Content authoring and editing software	1
Data management and query software	1
Development software	4
Electrical measuring and testing equipment	7
Electrochemical measuring instruments and accessories	9
Electronic manufacturing and processing machinery	56
Fluid mechanics equipment	11
Hydraulic presses	25

Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory electron and solid state physics equipment	29
Laboratory enclosures and accessories	17
Laboratory environmental conditioning equipment	24
Laboratory furnaces and accessories	26
Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Length and thickness and distance measuring instruments	2
Light and wave generating and measuring equipment	4
Liquid and gas flow measuring and observing instruments	15
Machine tools	7
Mechanical instruments	14
Metals and metallurgy and structural materials testing instruments	15
Network applications software	1
Non destructive examination equipment	13
Power tools	2
Rough and finishing tools	5
Rubber and plastic processing machinery and equipment and supplies	35
Soil measuring equipment	20
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Vision protection and accessories	3
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O\*NET (Occupation Information Network) data.